



Digital coder: Year 2

Essential prior knowledge for topic

Year: 1 and 2
Term: Spring 1
Task: Create a program so the Beebot can move around without colliding with any obstacles.

EYFS
Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary
Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate
Have a deep understanding of number to 10, including the composition of each number
Verbally count beyond 20, recognising the pattern of the counting system
Negotiate space and obstacles safely

Key Vocabulary- new in bold for Y2.
floor robots, commands, outcome, forwards, backwards, turn left, turn right, move left, move right, sequence, predict, debug, program, instructions, fixed movement, precise instructions, **decomposition, algorithm, route,**

Key Knowledge (facts and skills) for unit

I can give clear and precise instructions.
I can logically predict the outcome of a set of given instructions.
I can debug a set of given instructions to make them precise.
I can explain what happens when we change the order of instructions.
I can show the difference in outcomes between two sequences that consist of the same instructions.
I can identify different routes around my map.
I can test my map to make sure it is usable.
I can design an algorithm.
I can explain what my algorithm should achieve.
I can create an algorithm to meet an intended outcome..
I can plan more than one algorithm in a program.
I can put together the different parts of my program

Enquiry outcomes

KQ1: Can you debug unclear instructions?
Children will be given a set of instructions and a path. The instructions are ambiguous and will need to be debugged in order to be executed precisely (lack of precise distance or orientation given).

KQ2: Does the order of instructions affect the outcome?
Children will be given a series of commands involving all 4 direction commands. They will create sequences using these commands but in different orders and observe how the different orders affect the outcome.

KQ3: Can you create a usable map for a floor robot?
Children will design, create and test a mat for a floor robot. The children will be given 6 items to place on their map as obstacles and they need to ensure that they position them so the Beebot can still have a route/routes around the map in order for it to be usable.

KQ4: Can you design an algorithm for your map?
Children will design an algorithm to move their robot around the mat that they designed in Lesson 4. As part of the design process, children will outline what their task is by identifying the starting and finishing points of a route. This outlining will ensure that children clearly understand what they want their program to achieve.

KQ5: Can you create a program which uses more than one part.
Children will be given a map which asks them to visit two different places. They need to design a program which takes to them to both of these places. They need to design each stage separately and test it before combining the algorithm as a complete program.

See teach computing for the resources for this unit: [Programming A – Robot algorithms \(teachcomputing.org\)](https://www.teachcomputing.org/programming-a-robot-algorithms)